Covington Waterfront
Debris Deflection and Bank Stabilization Master Plan

Woolpert, Inc. - Moffatt & Nichol - Human Nature - ClasSickle, Inc. - Property Advisors - Sullebarger Associates - Thelen Associates, Inc.

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- **Mayor** – Denny Bowman
- **City Commissioners**
  - Sherry Carran
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- **City Manager** – Jay Fossett
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  - Planning Intern – Liz Barlik

Stakeholder Interviews

- Aiello, Andrew – Deputy General Manager, Transit Authority of Northern Kentucky
- Barnhard, Seth – Vice President – Development, Corporex
- Bernstein, Alan – BB Riverboats
- Bernstein, Jimmy – Mike Fink
- Birkenheuir, Tom – Supervisor, Duke Energy
- Carlton, Brad – United States Commission on Ocean Policy (USOCP)
- Caradonio, Tom – Northern Kentucky Convention & Visitor's Bureau
- Domaschko, John, Vision 2015
- Frueauff, David – Supervisor, Distribution Design, Duke Energy
- Hoffstetter, William – Sr. T and D Technician, Duke Energy
- Hult, Mark – Historic Licking Riverside Civic Association
- Keller, Gary – Covington Business Council (CBC)
- King, Charles – Historic Licking Riverside Civic Association
- Logsdon, Keith – Deputy Director for Long Range Planning – Northern Kentucky Area Planning Commission (NKAPC)
- Landrum, Gretchen – Executive Director, Northern Kentucky Convention Center
- Majors, Karen – Senior Capital Associate, Corporex
- McCabe, Mick – Internal Revenue Service (IRS)
- Peterman, Roger – Southbank Partners
- Rust, Linda – Duke Energy
- Sauer, Lisa – Historic Licking Riverside Civic Association
- Schwartz, Michael – Deputy Director for Current Planning – NKAPC
- Spahr, Darren – Covington Business Council (CBC)
- Sheben, John – Design Engineering Supervisor, Northern Kentucky Water District
- Tobergte, Daniel – President and CEO, Tri-County Economic Development Corporation (TRI-ED)
- Turner, Jim - Program Manager, Capitol Improvements Program, Sanitation District #1
- Vicory, Alan – The Ohio River Valley Water Sanitation Commission (ORSANCO)
- Whitaker, Rhonda – Duke Energy

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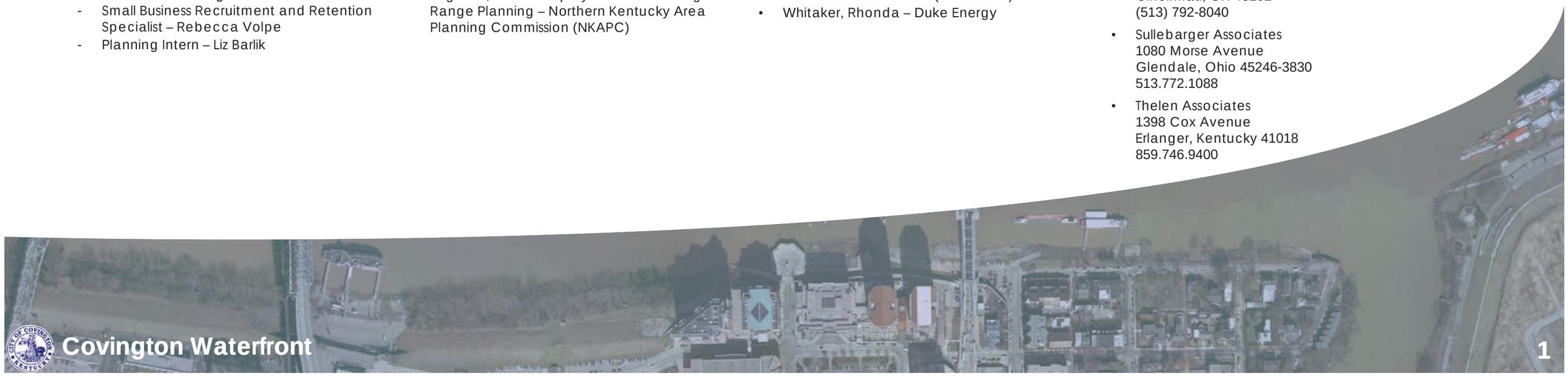

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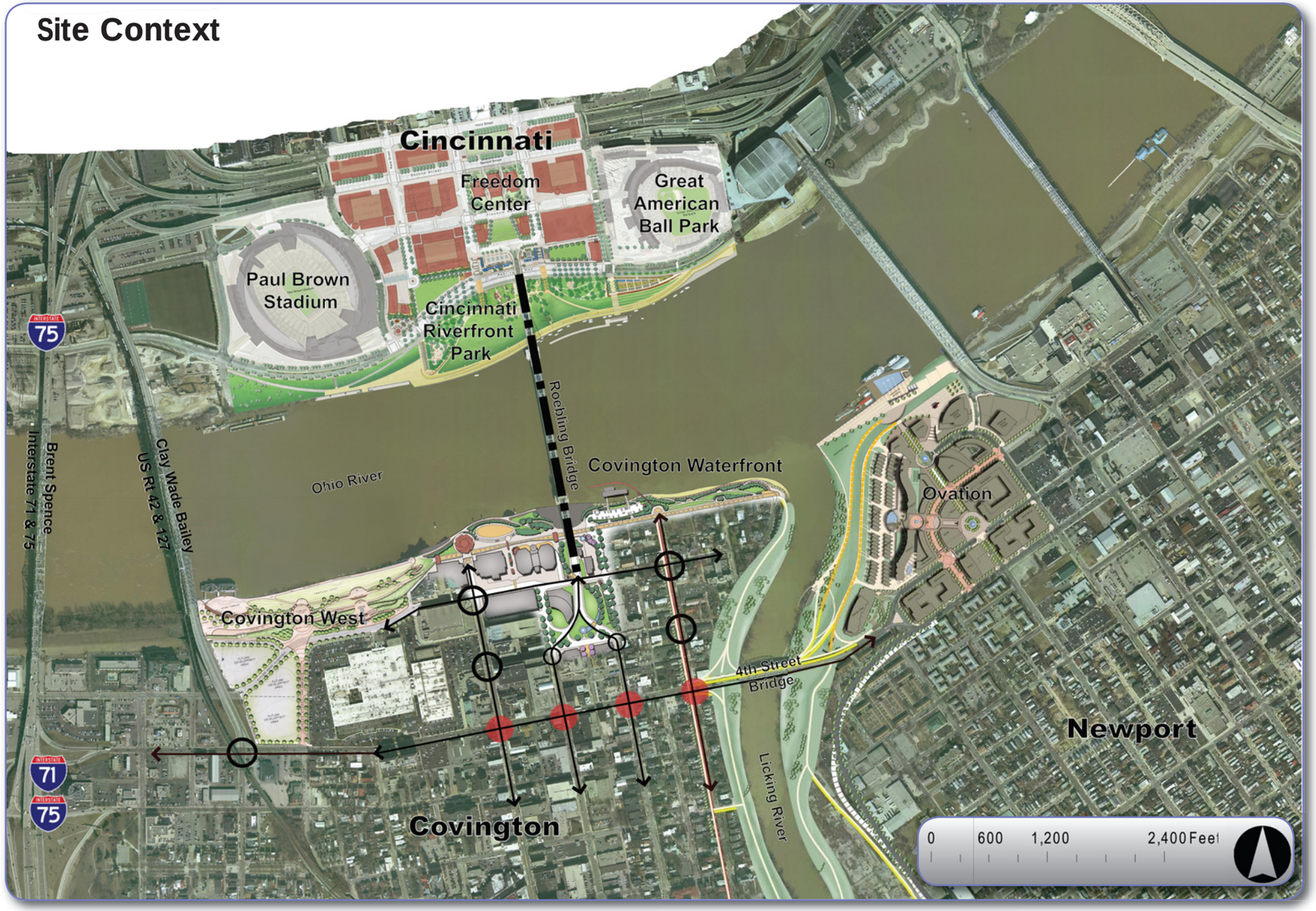
Site Context



Purpose

Covington's riverfront has played a vital role in its founding and history, and in the economic resurgence of the last decade. Building on initial successes, Southbank Partners, a partnership of the five Northern Kentucky river cities including Covington, prepared the Riverfront Commons Master Plan. Riverfront Commons established the framework for an interconnected greenway spanning the riverfront from Ludlow to Dayton. The Covington Waterfront Stabilization and Debris Deflection Master Plan, funded by a USEPA grant, is one of the first steps in implementing the unified public greenway.

The fundamental purpose of the master plan is to design a system of shoreline features that can be used in Covington and adapted for other locations to stabilize the embankment, protect public and private infrastructure and reduce damage and maintenance costs caused by debris deposits.

The special opportunity of this project is to design **shoreline protection** to check and repair the erosion and bank deterioration that has begun to threaten infrastructure that at the same time creates an inviting, sustainable, safe and accessible public waterfront that can host events, as well as individual recreation activities (multi-functional approach). Additionally, it is an opportunity to create devices to **divert debris** that causes damage to facilities and is costly to remove, while providing features that enhance the waterfront experience. Combined the stabilization and diversion features can enhance the community's quality of life and further economic development.

he United States Environmental Protection Agency funded this study based upon the Riverfront Commons Master Plan and the Licking River Corridor Study. The project area extends from the confluence of the Licking River on the east to the earthen levee west of the Madison Avenue Landing.

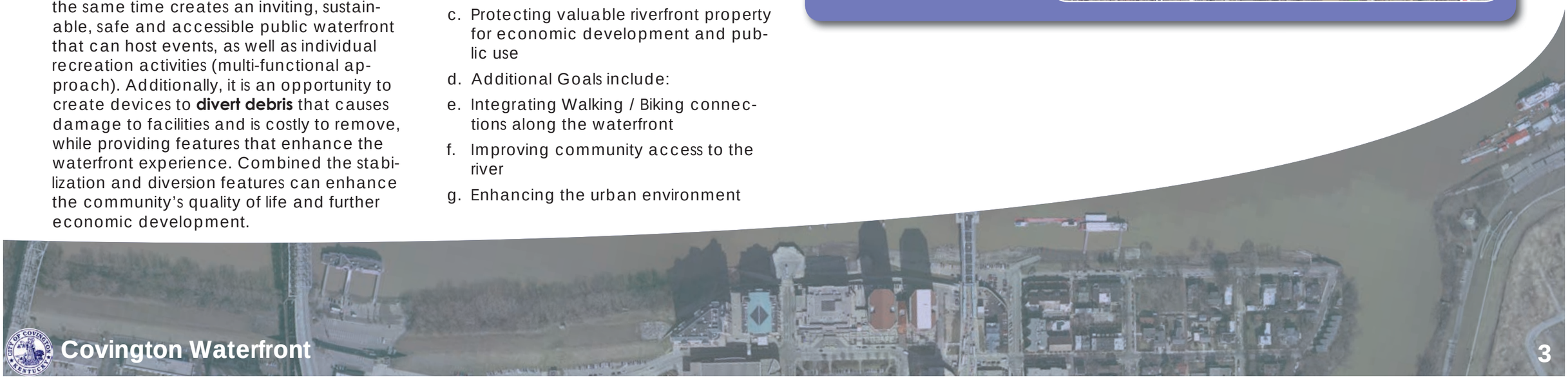
EPA Grant

The goals and objectives for the project focus on the following issues:

1. Generating a comprehensive plan to redevelop Covington's waterfront from the Licking River to the beginning of the earthen levee west of the Madison Avenue landing
2. Focus on two development areas:
   a. Riverfront East – Licking Riverside District
   b. Riverfront West – RiverCenter at the Madison Avenue Landing
3. Creating a national demonstration model for other cities to:
   a. Stabilize eroding embankments
   b. Mitigate debris deflection
   c. Protecting valuable riverfront property for economic development and public use
   d. Additional Goals include:
   e. Integrating Walking / Biking connections along the waterfront
   f. Improving community access to the river
   g. Enhancing the urban environment
   h. Capturing transient river traffic
   i. Providing education and recreational uses
   j. Focusing on Covington's unique cultural heritage

Riverfront Commons Master Plan

1. Creating a continuous public multi-use trail and recreational corridor
2. Linking development initiatives, downtowns and residential neighborhoods
3. Supporting and stimulating economic development in the cities adjacent to the river
4. Improving public access to the riverfront along a continuous river walk
5. Protecting and stabilizing the river bank
6. Managing river debris
7. Protecting and interpreting historical features
8. Supporting measures to enhance water quality
9. Improving the aesthetic quality of the riverfront



II. Master Plan

Preferred Plan

The Waterfront Master Plan is the result of balancing the technical requirements of stabilizing the waterfront embankment and deflecting debris with urban design concepts that optimize recreational and economic use of the waterfront and adjacent downtown. The plan creates a public waterfront with events and gathering places, walking and bicycle paths, extensive landscape and habitat enhancement and restaurant sites. The design is organized on a foundation of terraced, stabilized embankment, the structure of which creates many of the public use amenities.

Urban Design

The focus of the urban design component of the plan is to:

- *Link the entire waterfront together.*
- *Create places for individuals and small and large gatherings.*
- *Tie the waterfront back into the community.*
- *Improve public access down steep slopes to the water's edge*

The plan is based on a program of uses and features derived from an assessment of the market, community needs and desires integrated with an analysis of physical site conditions. The physical analysis encompasses soil and slope conditions, existing site improvements, and river hydrology and flooding.

The Waterfront Master Plan is organized into four zones based both on the land and its existing and potential use.

The Point

A dramatic overlook and beach area anchors the east end of the waterfront at the mouth of the Licking River. The plan proposes to:

- Reclaim and stabilize the confluence, preserving and protecting the historic stone wall, overlook and beach.
- Create a linkage to and from the Licking River Greenway Trail and the new Fourth Street Bridge, with its proposed pedestrian overpass.

The Terraces

The narrow shoreline along the historic Licking Riverside neighborhood offers dramatic views of Cincinnati, and must be terraced to allow access along the river and from the neighborhood down to the water. Key recommendations for this zone include:

- Celebrate the Licking Riverside Historic District by enhancing the upper promenade / streetscape with authentic historic amenities.
- At the same time, create a series of passive, open green terraces that flow gently down to a stabilized river's edge. Paths and land forms undulate in forms inspired by the flowing movement of the river.

The Gateway

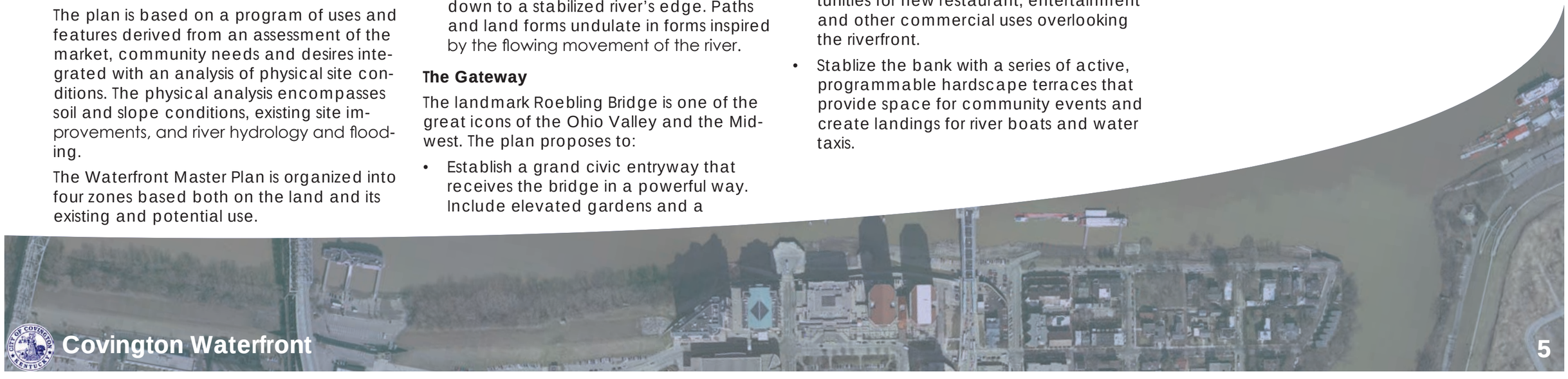
The landmark Roebling Bridge is one of the great icons of the Ohio Valley and the Midwest. The plan proposes to:

- Establish a grand civic entryway that receives the bridge in a powerful way. Include elevated gardens and a series of coordinated water features that penetrate deep into the fabric of the city and link with a thriving mixed use district.
- This gateway complements Cincinnati's Freedom Center and proposed Riverfront Park.
- Create a simple landing below the bridge, reminiscent of the historic riverfront, that allows the bridge architecture to be fully appreciated.

The Gallery

The waterfront west of the bridge is framed by the Roebling Bridge, the murals on the floodwall and the large platform at the end of Madison Street. This is the broadest section of the waterfront. Near the Convention Center and hotels, it is well suited for large and small community events as the heart of the waterfront. The plan proposes to:

- Energize the waterfront commercial district with a signature architectural feature (a crystalline vortex with a mix of commercial and interpretive spaces).
- Link this feature to a new promenade above the flood wall that provides opportunities for new restaurant, entertainment and other commercial uses overlooking the riverfront.
- Stablize the bank with a series of active, programmable hardscape terraces that provide space for community events and create landings for river boats and water taxis.



Shoreline Stabilization

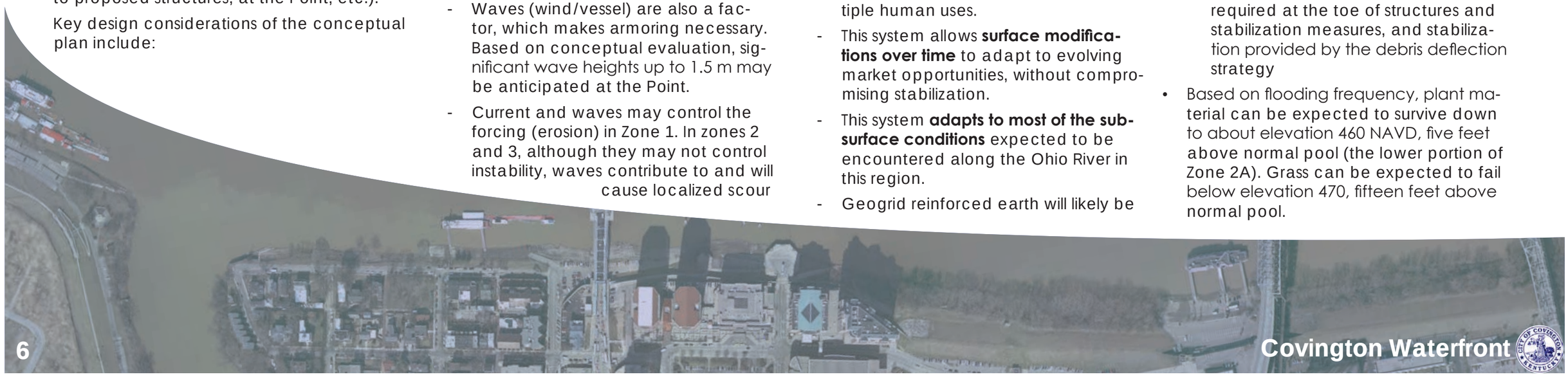
The design concept for stabilization of the Covington waterfront is to create a structure for **global slope stability** that is adaptable to a range of soil conditions and a variety of finished topographic and geometric designs for the surface environment. This concept is readily adaptable to many sections of the river where current velocities are relatively low, causing minimal erosion from scouring, and where current or future human use of the waterfront is desired.

The primary cause of bank failure in this region of the Ohio River is subsidence of the filled or otherwise unstable slopes—global slope instability (due to the rise and fall of the water table). Locally, there are reaches where extensive scouring occurs from high velocity currents and wave action. The concept employs a combination of proven stabilization and slope protection techniques, with geogrid stabilized earth embankment to provide a uniform sustainable foundation. Additional stabilization measures are identified in locations where erosion attributable to other forcing is anticipated (e.g. adjacent to proposed structures, at the Point, etc.).

Key design considerations of the conceptual plan include:

General

- Water level—frequency, duration and level of inundation—dictates what vegetation will grow and influences stability and the selection of materials (wood, steel, concrete). Four Zones will govern design:
  - **ZONE 1** (Lower) - Swash (453 – 458 ft NAVD) – 65% occurrence between 453 and 458
  - **ZONE 2A** (Middle) – Terrace 1 (458 – 465 ft NAVD) – 35% occurrence above 458; 20 % occurrence between 458 – 465
  - **ZONE 2B** – Terrace 2 (465 – 475) – 15% occurrence above 465; 10% occurrence between 465 and 475
  - **ZONE 3** (Upper) - Flood (475 – 485 ft NAVD) - < 5% above 475 ft; 3% between 475 and 485; <2% above 485
- Surficial erosion is anticipated in reaches of the project area.
  - Velocities are generally limited to less than 2 m/s with the exception of local areas of scour.
  - Waves (wind/vessel) are also a factor, which makes armoring necessary. Based on conceptual evaluation, significant wave heights up to 1.5 m may be anticipated at the Point.
  - Current and waves may control the forcing (erosion) in Zone 1. In zones 2 and 3, although they may not control instability, waves contribute to and will cause localized scour and erosion.
- Design must consider potential changes to sedimentation and hydrodynamics (avoid creating instability). Overall strategies should either reduce energy or forcing acting on the bank, or strengthen or stabilize the bank to mitigate forcing.
- Sedimentation is also a factor that will influence materials and slopes as well as final design, such as provision of water sources for washing pavements.
- Most of the shoreline is fill material of variable quality and bearing capacity. Receding flood waters cause the most damage by rapid drawdown action on the embankment. The rise and sudden fall of the water table create saturated soil (increased weight) and reduced effective stress (soil strength).
- A key to stabilization throughout the waterfront is **global slope stability**, which can be achieved in nearly all cases with geogrid reinforced earth.
  - This system allows **flexibility** to detail the surface topography, geometry and materials to accommodate multiple human uses.
  - This system allows **surface modifications over time** to adapt to evolving market opportunities, without compromising stabilization.
  - This system **adapts to most of the subsurface conditions** expected to be encountered along the Ohio River in this region.
  - Geogrid reinforced earth will likely be used wherever slopes exceed 3 horizontal to 1 vertical (3:1 slope); flatter slopes will likely be accomplished with unreinforced compacted fill.
  - Steeper cross sections are used closer to the normal pool elevation, generally in Zones 1 and 2A (elevations 455 to 465 NAVD), where reinforced earth fill and armored surface will usually be required.
  - Horizontal extent of geogrid reinforced earth will vary from 30 to 60 feet depending on the proposed cross section and substrate.
- Specific consideration is given to creating transition zones, eliminating sudden changes in slope or profile and at structures or where there is change in materials.
  - Transition points both in plan and section are identified and addressed (e.g. adjacent to bridge abutment and piers or “bump outs”; transition from a horizontal grass slope to armored slope; etc.).
  - Additional evaluation of stability is required at the toe of structures and stabilization measures, and stabilization provided by the debris deflection strategy
- Based on flooding frequency, plant material can be expected to survive down to about elevation 460 NAVD, five feet above normal pool (the lower portion of Zone 2A). Grass can be expected to fail below elevation 470, fifteen feet above normal pool.



Slope Conditions

- Generally slopes steeper than 3:1 will be geogrid reinforced. Since most conditions involve unconsolidated fill or other soil of poor bearing, geogrid will extend inland approximately two times the height of the embankment (specific dimensions will be subject to local conditions).
- Existing soils may be suitable for backfilling of the geogrid reinforced embankment. Local conditions will determine where existing material is usable.
- There may be up to 5 to 10 feet of fill near the shoreline at existing pool; most of this must be removed and replaced as new compacted and tested fill using geogrid.
- Where a slope in excess of 3:1 approaches close to the shoreline, and undercutting of poor quality fill is required. A short sheet pile wall (permanent or temporary) can be installed to allow excavation to sound substrate for geogrid reinforced earth embankment, which will be surfaced with riprap or stone (below elevation 460 NAVD) that covers the top of the sheet pile wall.
- Stair step cuts into existing material to create solid subsurface for compacted fill would likely be required.
- Vertical edges at the water at normal pool can be sheet pile or soldier pile structures separate from the geogrid reinforced earth. Walls will be capped with concrete walk paving. Some removal of poor quality fill will be required in places to reduce load on the wall.
- Where the shoreline is extended into the river by a sloped surface, the toe must be stabilized by dumping rock to build out the shoreline at a 3:1 slope.

Environmental Enhancements

- Global slope stabilization will allow more extensive planting of the waterfront, which will tend to improve the quality of runoff into the river.
- Most efforts to filter runoff, other than through plant material, will probably be fruitless, given the effects of siltation from flood waters on pervious materials and the close proximity of the project to the major body of water, the Ohio River.

Slope Surfacing

- Armored surface treatment will include:
  - large boulders (1 to 2 Ton)
  - large stone (1 and one half to two foot diameter) riprap
  - riprap
  - stone or modular unit geogrid reinforced walls
- Planted surface treatments will include:
  - live stake native, low growing (3 to 5 feet high) shrubs
  - mat or planted native low growing (3 to 5 feet high) shrubs and perennials
  - turf (durable low fertilizer requiring species) reinforced in places, based on local condition

Debris Deflection

A controlling requirement of the debris diversion structures is that they must function at significant changes in elevation. Primary debris deposition tends to occur when the river rises to Zone 3 (above elevation 475 NAVD). However it must also function below that elevation. This requires a two component diversion system.

1. A floating component that can function at normal pool, and float up to full flood stage (above elevation 485 NAVD)
2. A fixed component over land areas above normal pool that can begin diverting debris starting at 20 feet above normal pool and extending to the upper portion of Zone 3.
3. The recommended diversion system is compact, and with its two components is readily adaptable to multiple locations along the Ohio River as well as smaller rivers such as the Licking.

The Pier

The recommended design employs a fixed 10 foot wide pier extending from the overlook at the end of Garrard Street. The pier is built on a 50 degree angle down stream. Designed as an amenity viewing overlook that provides access to a point 30 feet above the water's edge, it is designed with materials compatible with the character of the historic neighborhood, probably steel and concrete with timber facade. The pier head is enlarged with benches for viewing the river and Cincinnati sky-

Above: Examples of fixed piers
Below: Examples of floating piers

line. A retractable screen can be lowered as the river rises to begin diverting debris at elevation 475 NAVD.

The sculptural barge

The floating portion of the system is a barge that extends from the end of the pier into the river, bending to align parallel to the shoreline about 10 meters beyond the line of the Roebling Bridge Pier. Based on the conceptual evaluation, the floating structure is 6 feet deep, with about 1.5 feet projecting above the water. It is lined with heavy timber to protect the structure and harmonize with the pier.

An important innovation in this system is the design of the top of the floating structure. Mounted to the top of the basic floating structure will be a sculptural crown that will serve two purposes.

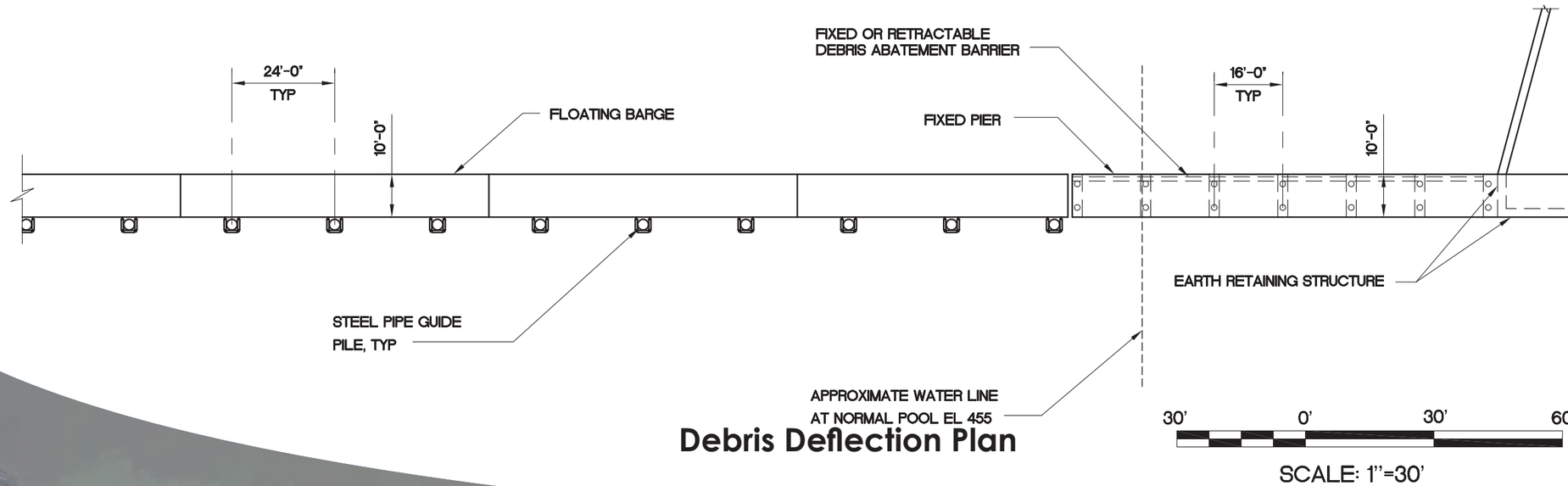
1. It will be a work of environmental art compatible with the section of the waterfront on which it is used. At Covington, it will be designed to be an attraction when viewed from the Roebling Bridge, from the Mike Fink and from the shore at various elevations.
2. It will prevent people from walking on the floating structure.

The floating structure can be supported by piles on either side or both sides.

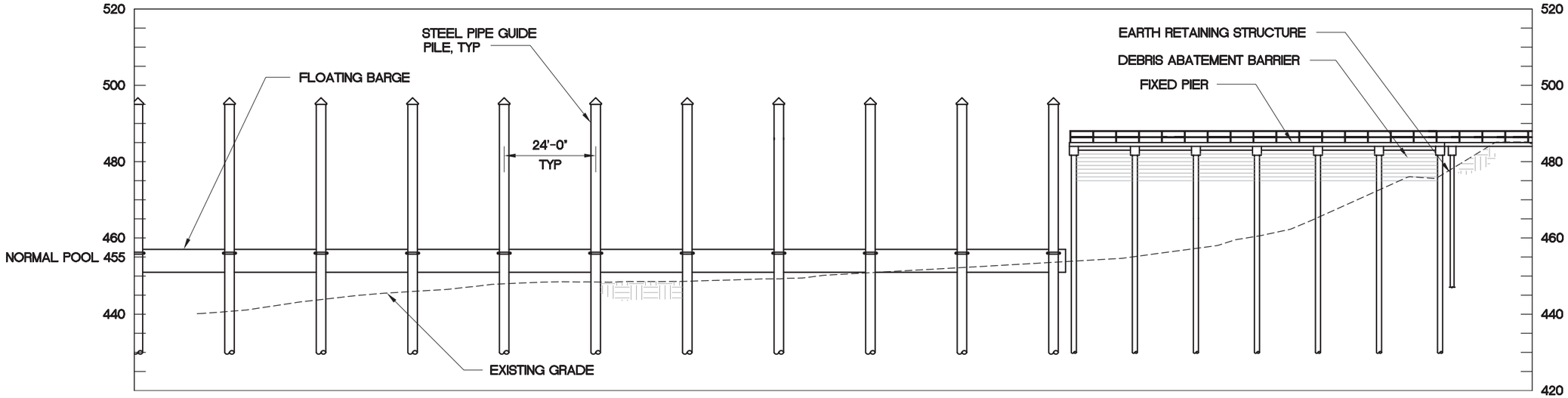
- The plan recommends piers on the shore side, simplifying design to a smooth river side for debris deflection.
- The piers must be tall enough to allow the floating structure to stay above water at flood stage of the river (Elevation 495 NAVD).
- Color and material of the piers will be important, to the appearance.
- The plan recommendation is steel painted to harmonize with the Mike Fink and the sculpture

Lighting of the pier and floating structure will be important.

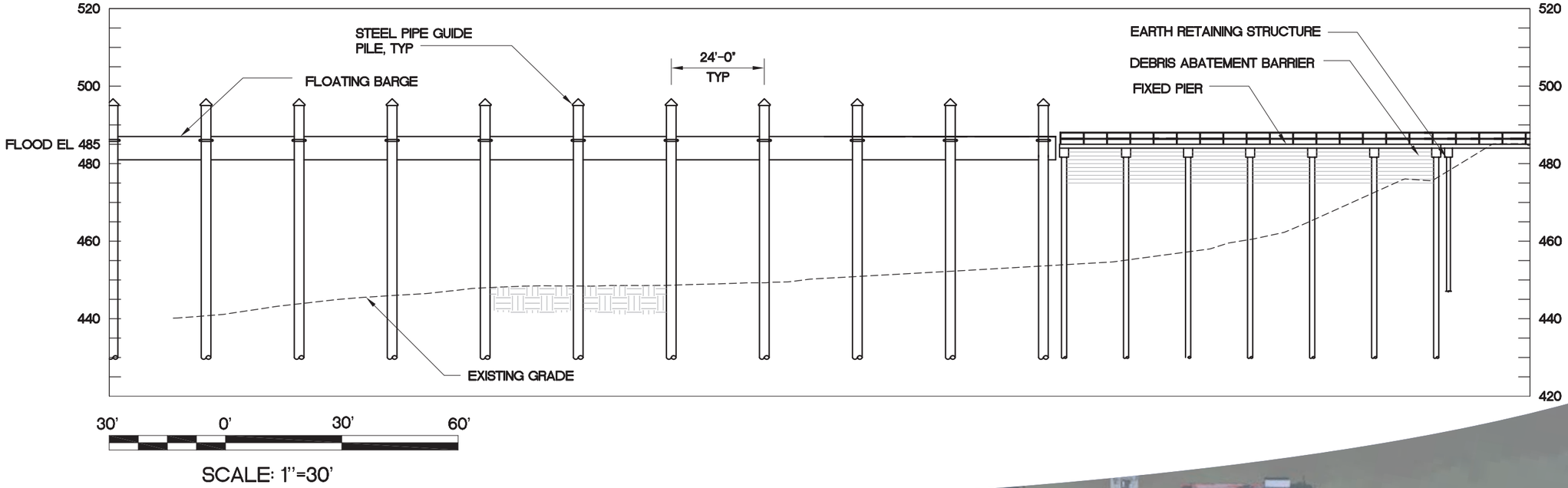
- Navigation lights will identify them for boats and ships.
- Low level lighting on the pier will provide safety, without interfering with views.
- Lighting on the floating section will illuminate the sculpture at night, without conflicting with navigation.
- Navigation lights will also be integrated into the sculpture design to mark the outer edge of the structure as it rises.



Debris Deflection Plan

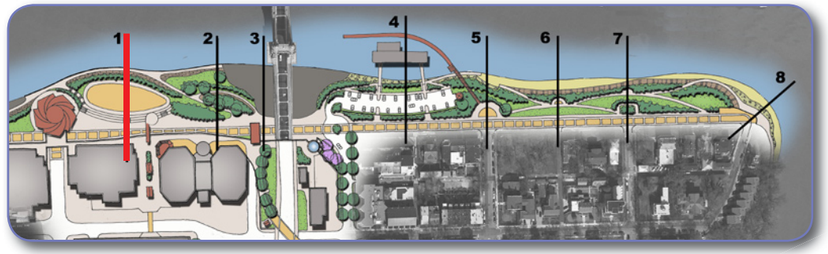


Debris Deflection Section 1 - Normal Pool



Debris Deflection Section 2 - Flood Elevation

II. Master Plan

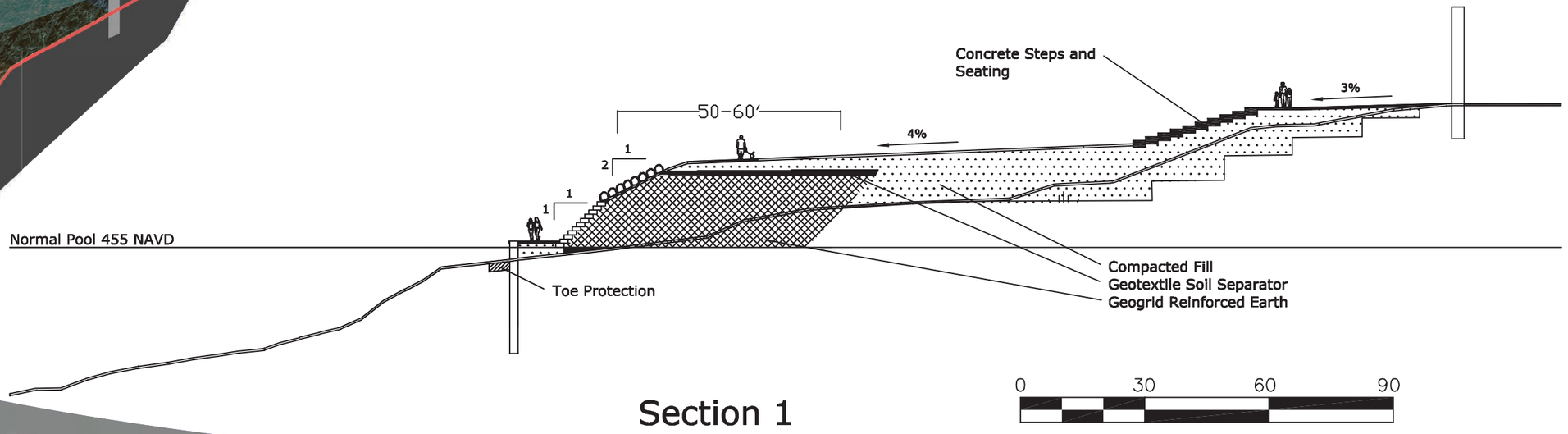


Illustrative Sections

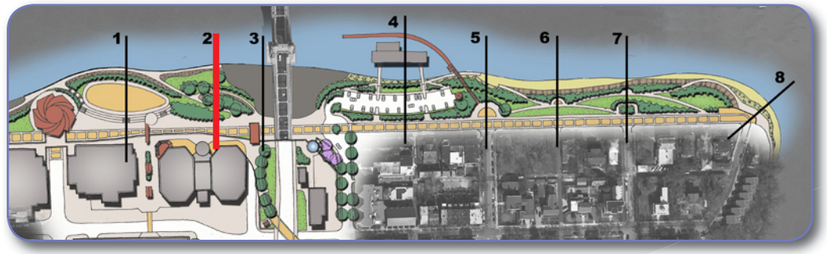
The plan proposes a variety of conditions that may apply with some minor modification to many locations along the Ohio and Licking Rivers in the region. Eight sections illustrate the variety of conditions and the flexibility of the global slope stability gained through the geogrid reinforced earth system.

Section 1: Filled areas with pedestrian access to a hard edge at the water:

- Use sheet pile or soldier pile wall at water's edge, with concrete walkway as cap.
- Bank is geogrid to the top of the +/-25' high 2:1 slope (El. 455 to +/-480 NAVD). Geogrid extends a distance of 50 – 60 feet (two times the height) from the face of the wall, with existing material reused as fill for the geogrid reinforced embankment.
- The balance of the fill is compacted imported fill, with undercutting of existing material to create a benched substrate, to relieve load on the reinforced earth.



Section 1



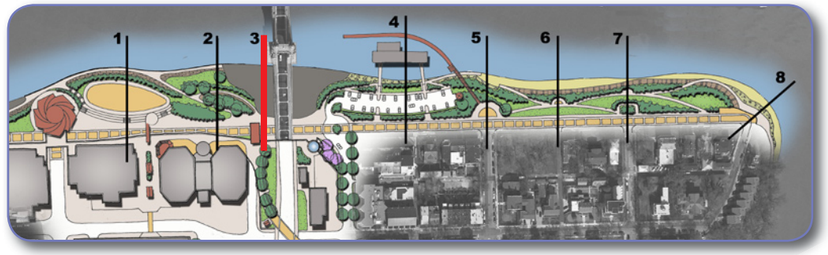
Section 2

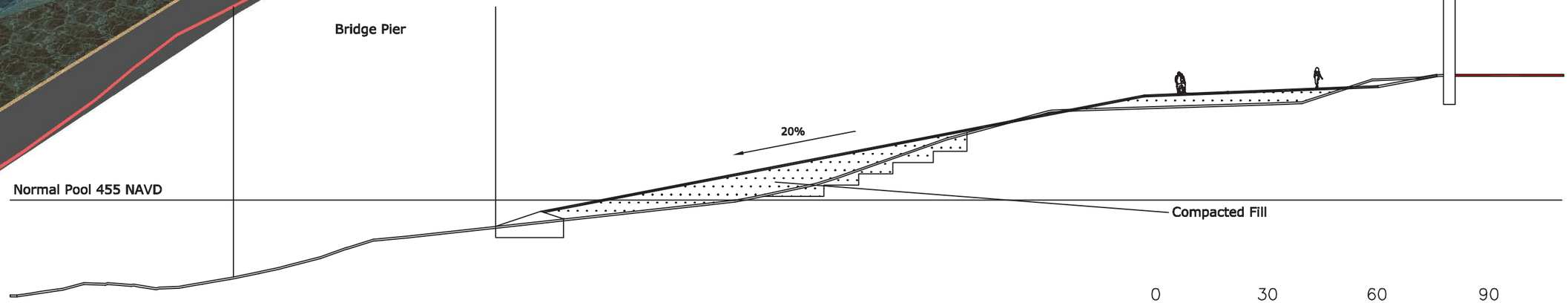
0 30 60 90

Section 2: Terraced filled areas with pedestrian access to hard edge at the water:

- Similar treatment to Section 1 with geogrid only on the lower 1:1 armored slope.
- Upper 3:1 sloped areas on new fill do not need geogrid reinforcement.
- Surfaces of 3:1 and flatter slopes can be turf or shrub/ perennial vegetation that can be changed, if needed, as long term use programming demands.
- Minimum slopes on planted surfaces are 4% to 5% to reduce silt buildup during flooding and aid cleanup.

II. Master Plan

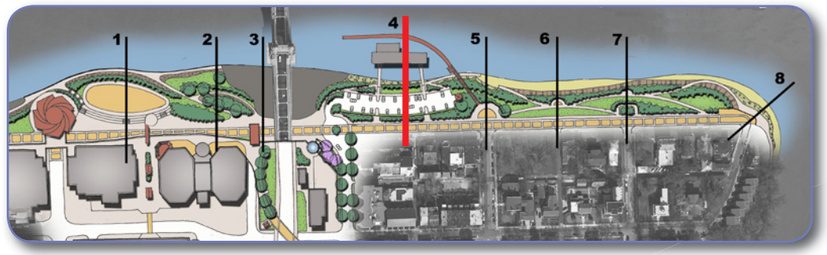


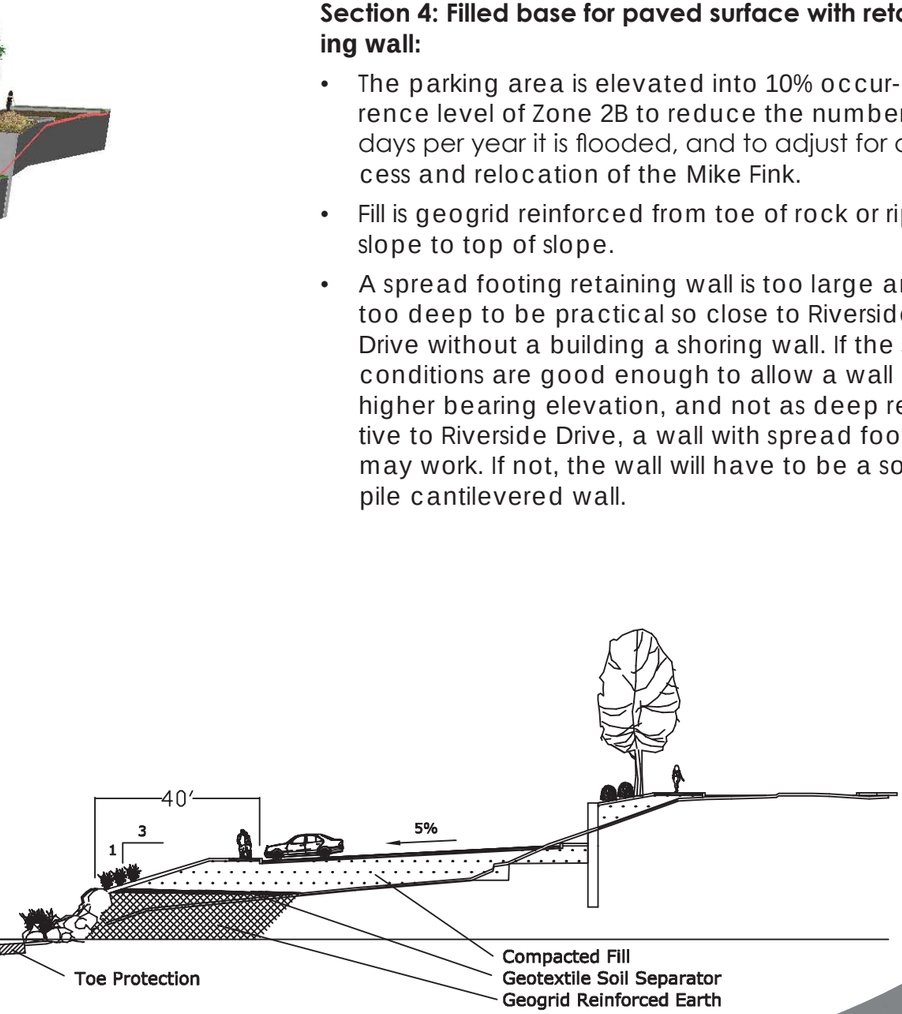


Section 3

Section 3: Cobblestone landing on gradual slope:

- The toe of the slope is anchored below normal pool with large rock sloped at 3:1.
- The bank, sloped at 12% to 20% is compacted fill—some undercutting and refilling may be required—with cobblestone (or other hard surface) mortared in place on a concrete base to allow pedestrian and amphibious access to the river.
- The cobblestone slope extends to 3 feet below normal pool elevation, to accommodate pool fluctuations.





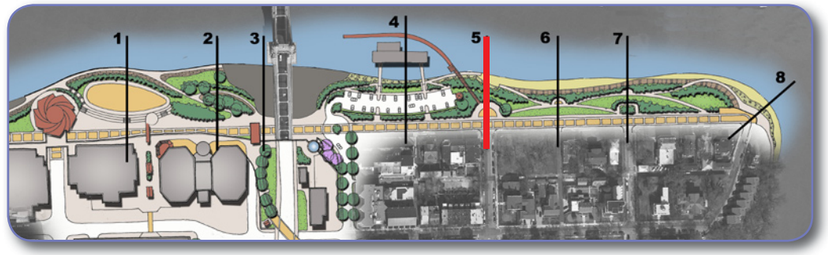
Section 4

0 30 60 90

Section 4: Filled base for paved surface with retaining wall:

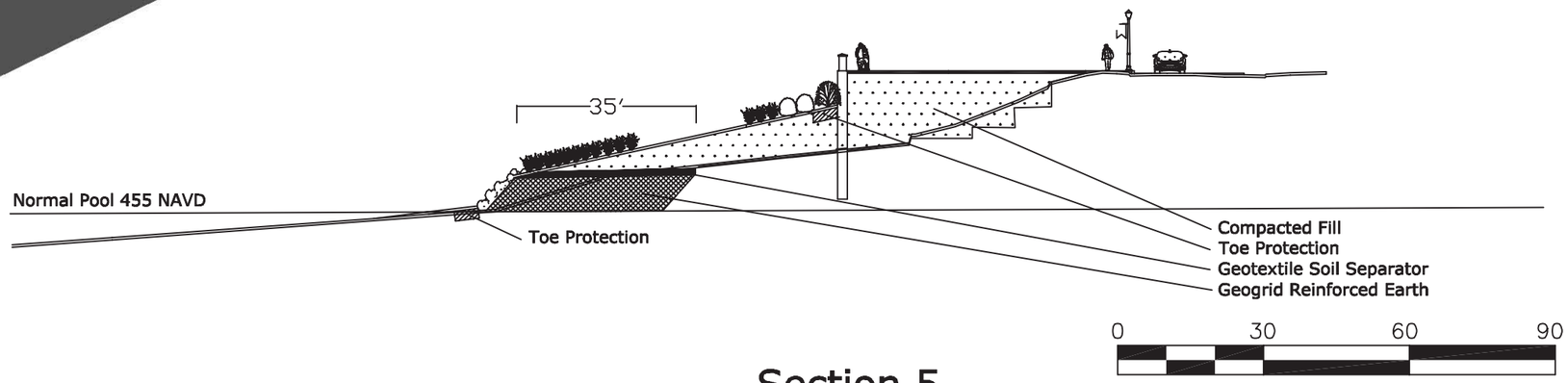
- The parking area is elevated into 10% occurrence level of Zone 2B to reduce the number of days per year it is flooded, and to adjust for access and relocation of the Mike Fink.
- Fill is geogrid reinforced from toe of rock or riprap slope to top of slope.
- A spread footing retaining wall is too large and too deep to be practical so close to Riverside Drive without a building a shoring wall. If the soil conditions are good enough to allow a wall at a higher bearing elevation, and not as deep relative to Riverside Drive, a wall with spread footing may work. If not, the wall will have to be a soldier pile cantilevered wall.

II. Master Plan

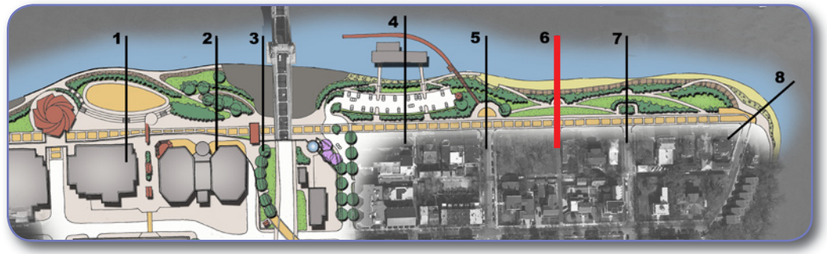


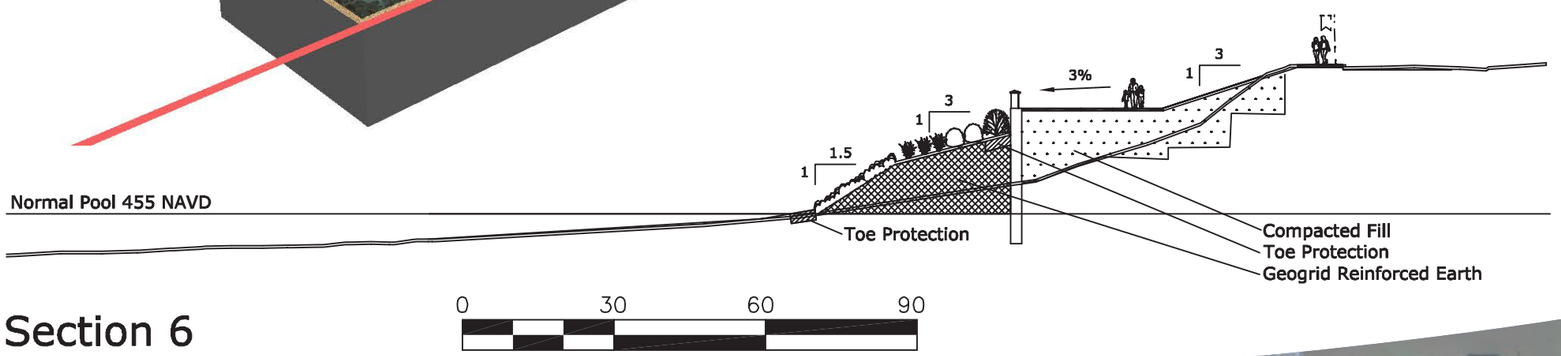
Section 5: Limited fill with steep toe and retaining wall at top of slope:

- Stabilize the slope with geogrid reinforced earth fill from toe of a stone faced slope to the top of a 2:1 or steeper slope.
- Local conditions will determine the need for reinforcing of the upper 3:1 slope.
- The wall may be similar to Section 4, since bearing for the retaining wall will be too deep (due to depth of fill) to be practical. It may be possible to raise it up to the new compacted fill layer with geogrid in the compacted fill above the wall. Final design will be a function of global stability.



Section 5





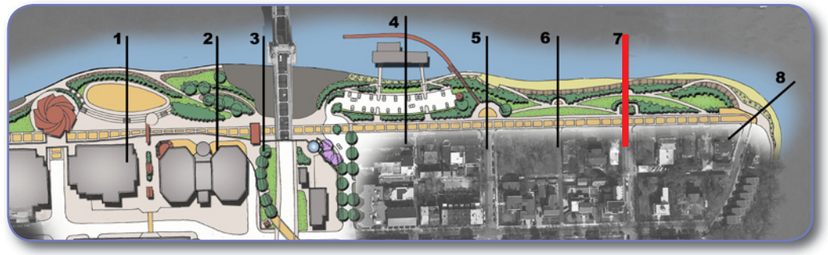
Section 6

0 30 60 90

Section 6: Fill condition, steep slope with wall.

- Stabilize the slope with geogrid reinforced fill from toe of slope to wall, with planting.
- It may be possible to support a short wall in the compacted fill with geogrid in the fill embankment above the wall, or a soldier pile cantilevered wall may be used.
- The slope above the wall may not need geogrid, based on local conditions.
- With the toe of the slope close to normal pool elevation, it may be necessary to excavate below water level. Where ever excavation below normal pool is required, it will be necessary to use a short sheet pile wall at toe of slope to protect the excavation. Following placement of reinforced fill, the top of the wall can be covered with stone or riprap.

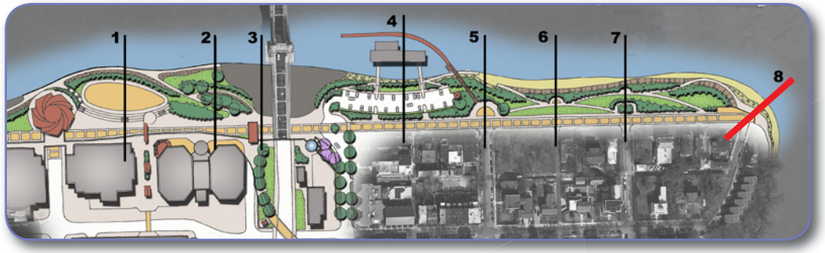
II. Master Plan

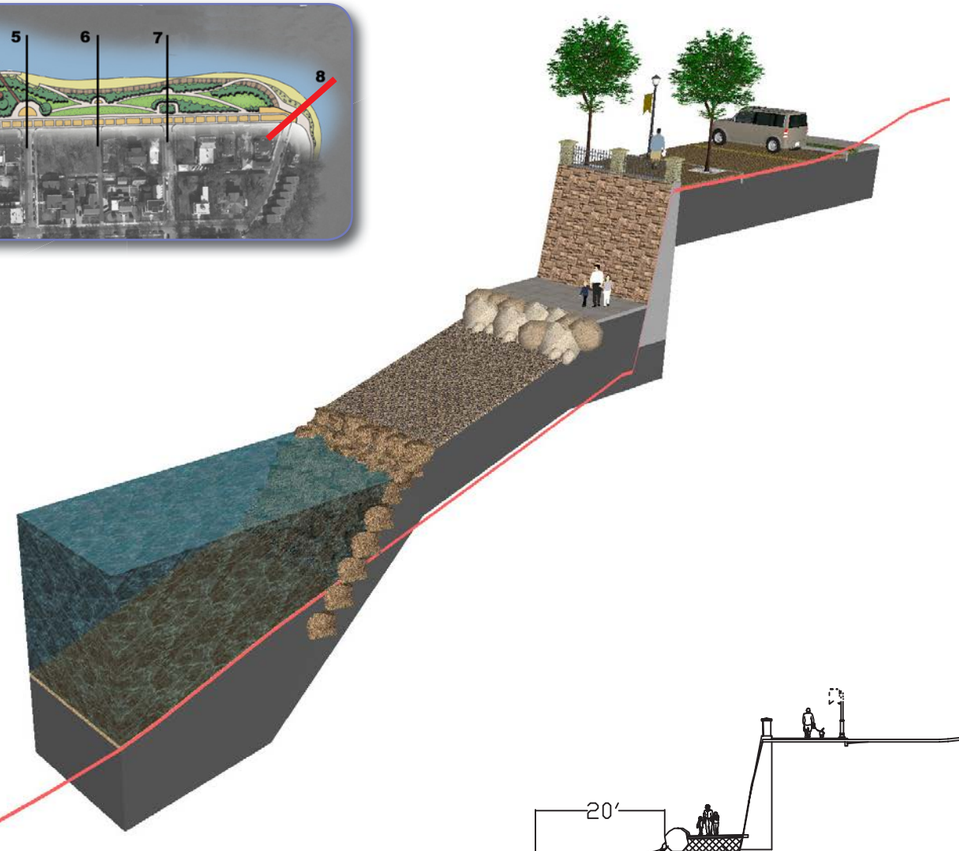


Section 7

Section 7: Fill condition with steep slopes and terraces (Similar to Section 6).

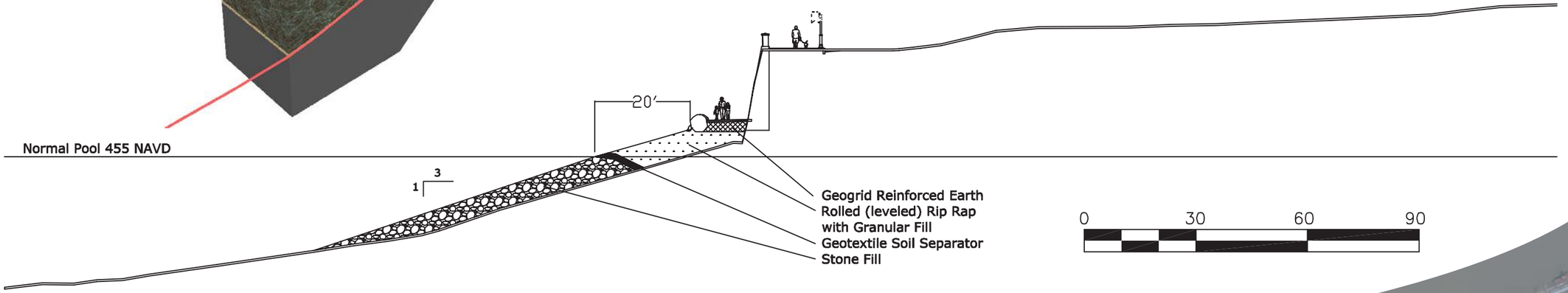
- The low seat wall or oversized curb can be supported on geogrid reinforced earth.
- The upper wall is similar to Section 4.
- Installation near water's edge is similar to Section 6.





Section 8: Stabilization at the base of an existing wall.

- Large boulders are piled at the base of the wall to prevent further erosion, and contain compacted fill (soil separator needed) that supports a concrete walk.
- Large boulders (larger than abrasion loads would require) provide a safe edge to a walking surface in a frequently flooded zone, eliminating the need for a railing that will be damaged by flood borne debris.
- Geogrid reinforced fill extends the shoreline and supports the boulders and concrete walk, reclaiming a small beach area.
- The toe of the reinforced slope requires heavy armor(large stones at 2:1 or flatter, or low sheet pile or soldier pile wall at the top at normal pool elevation)
- The beach provides easy pedestrian access to the water. The beach should be riprap, compacted with coarse sand imbedded to create a walking surface while resisting wave erosion.



Section 8

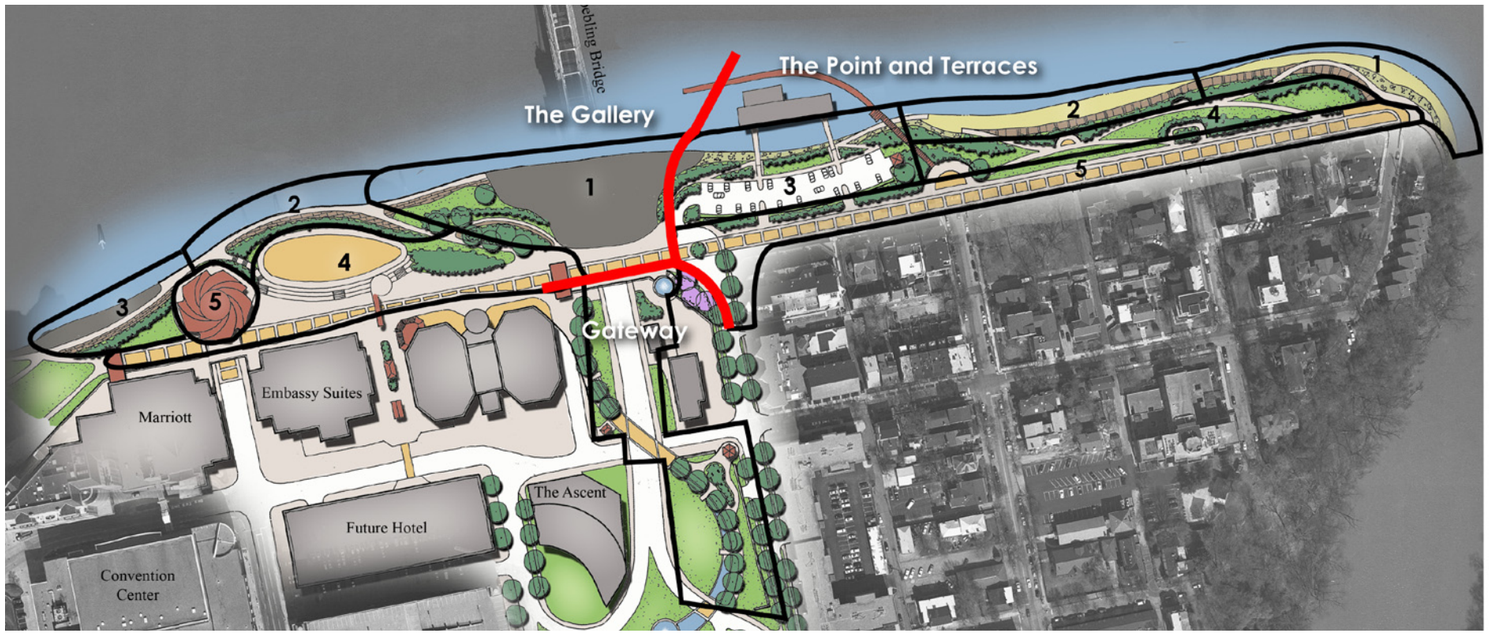
III. Development Costs

The master plan describes the development concept in sufficient detail to assign order of magnitude conceptual costs to the overall project. Assuming that funding for the total waterfront development may not be funded at one time, the phasing plan identifies preliminary portions of the plan that can be built as funding becomes available. The ACOE Continuing Authority can fund up to approximately $2,000,000 at a time, so this increment was used to define individual potential phases.

The preliminary cost opinion (see Appendix 4. M) is based on existing data and the conceptual master plan and design sections. Additional geotechnical investigation and engineering, as well as hydrodynamic model calibration of the refined design will be essential to determine final accurate construction costs.

The cost opinion is divided by the waterfront design zones, The Point, The Terraces, The Gallery and The Gateway. For purposes of the phasing assessment, The Gateway will be considered the area above the flood wall from the landing of the Bridge south to Third Street. This area is outside of the Stabilization and debris deflection project area, and therefore is not considered in the phasing plan (however a conceptual order of magnitude cost is included in the Appendix, for information purposes).

The concept for phasing is to stabilize the lower portion of the shoreline first, and then complete the upper portions. While the numbered order of the phases is not necessarily a required sequence it does represent a priority, based on existing conditions. Areas are generally outlined on the Master Plan Phasing Diagram.

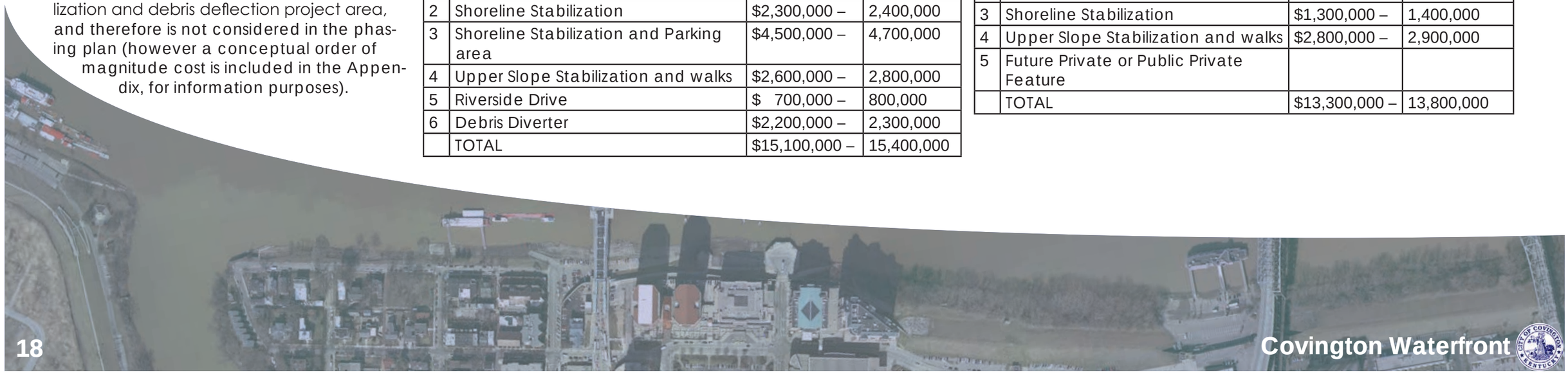


The Point and Terraces

	Phase	Order of Magnitude Cost	
1	Shoreline Stabilization/wall protection	$2,300,000 –	2,400,000
2	Shoreline Stabilization	$2,300,000 –	2,400,000
3	Shoreline Stabilization and Parking area	$4,500,000 –	4,700,000
4	Upper Slope Stabilization and walks	$2,600,000 –	2,800,000
5	Riverside Drive	$ 700,000 –	800,000
6	Debris Diverter	$2,200,000 –	2,300,000
	TOTAL	$15,100,000 –	15,400,000

The Gallery

	Phase	Order of Magnitude Cost	
1	Shoreline Stabilization/Landing	$2,200,000 –	2,300,000
2	Shoreline Stabilization below Plaza	$7,000,000 –	7,200,000
3	Shoreline Stabilization	$1,300,000 –	1,400,000
4	Upper Slope Stabilization and walks	$2,800,000 –	2,900,000
5	Future Private or Public Private Feature		
	TOTAL	$13,300,000 –	13,800,000



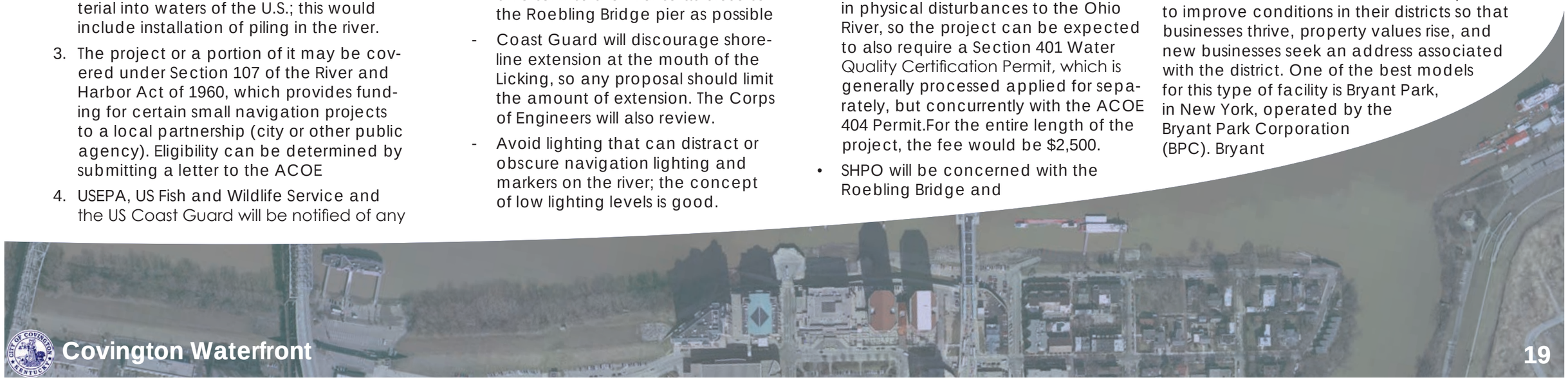
Regulatory Review

This project will fall under several levels of Federal, State and local regulation. While regulatory agencies cannot review concept plans prior to application for permit, the Coast Guard and US Army Corps of Engineers (ACOE) have viewed the conceptual designs informally. Neither agency found any elements clearly beyond the bounds of consideration for a permit. However each will have to review in detail any plans submitted before offering specific comments or questions. The Covington Waterfront improvements recommended in this Master Plan will require review under:

1. Section 10 of the Rivers and Harbors Appropriation Act of 1899 requires Congressional Approval (reviewed by the ACOE) for construction of any bridge, causeway, dam, or dike over or in any port, roadstead, haven, harbor, canal, navigable river, or other navigable water of the United States.
2. Section 404 of the Clean Water Act requires approval of a permit by the ACOE for the discharge of dredged or fill material into waters of the U.S.; this would include installation of piling in the river.
3. The project or a portion of it may be covered under Section 107 of the River and Harbor Act of 1960, which provides funding for certain small navigation projects to a local partnership (city or other public agency). Eligibility can be determined by submitting a letter to the ACOE
4. USEPA, US Fish and Wildlife Service and the US Coast Guard will be notified of any permit application and will have an opportunity to comment.
   - Limited presence of wildlife or habitat should minimize or eliminate any concerns of USEPA or USFWS
   - The Coast Guard offered a few comments, which have been incorporated into the plan:
     - Navigation is the primary Coast Guard issue. The Coast Guard wants to limit recreational boating, and therefore docking in the area of the Licking River confluence and the nearby bridges. Its position is that no docking be allowed along the Covington east and central waterfront
     - It is best to keep the diverter as far down stream as possible from the mouth of the Licking River.
     - The navigation channel is from bank to bank along most of the Ohio River but the Army Corps determines whether the channel varies. Keep the extension of the diverter into the river to as close to the Roebling Bridge pier as possible
     - Coast Guard will discourage shoreline extension at the mouth of the Licking, so any proposal should limit the amount of extension. The Corps of Engineers will also review.
     - Avoid lighting that can distract or obscure navigation lighting and markers on the river; the concept of low lighting levels is good.
     - The debris diverter will need something to delineate its location if it goes underwater, which means some of the piles would have to extend above the highest waterline elevation and be lit and marked for navigation.
5. State regulatory agencies, including the Department of Water and State Historic Preservation Office (SHPO) will also participate in review.
   - The project will require a State of Kentucky General Permit for Strom Water Point Source Discharges from the Division of Water (DOW)(under KPDES Regulation 401 KAR 5:002, Section 1 (285)). At least 48 hours before earthwork commences, the City must issue to DOW a Notice of Intent (NOI) for Stormwater Discharges
   - It will require a Floodplain Development Permit from the DOW Surface Water Permits Branch Floodplain Management Section, under Kentucky Revised Statutes (KRS) Chapter 151.250.
   - The proposed improvements will result in physical disturbances to the Ohio River, so the project can be expected to also require a Section 401 Water Quality Certification Permit, which is generally processed applied for separately, but concurrently with the ACOE 404 Permit.For the entire length of the project, the fee would be $2,500.
   - SHPO will be concerned with the Roebling Bridge and the Historic Licking Riverside neighborhood. Review to date indicates the plan is generally in compliance with SHPO requirements.
6. City of Covington and Kenton County Permits will also be required.

Operation Strategy

Completion of the shoreline improvements will also provide the basic infrastructure for the Covington Waterfront park and greenway envisioned by Riverfront Commons. This park will be an environment that will attract increased daily visitation, and will provide a venue for community events and programs. Management of such a facility typically exceeds the capacity and authority of most Park and Recreation departments. Most similar urban activity centers are managed by an organization or public/private partnership set up specifically to manage that center. Often such organizations are funded through a Business Improvement District (BID). BIDs are privately funded organizations that perform functions and services traditionally regarded as the province of government over a defined urban area. They exist to improve conditions in their districts so that businesses thrive, property values rise, and new businesses seek an address associated with the district. One of the best models for this type of facility is Bryant Park, in New York, operated by the Bryant Park Corporation (BPC). Bryant



IV. Management Concept

Park is the primary model used to structure the redevelopment and management of Fountain Square Park in Cincinnati.

Bryant Park, New York, NY

Bryant Park is a public park; however BPC accepts no public funds, and operates the park on assessments on surrounding property within the BID, fees from concessionaires, and revenues generated by public events. The BPC feels strongly that a crowded park is a successful one, and that a full slate of events is essential in drawing people to the park. It also believes that the revenue paid by sponsors of events is necessary to keep the park well-maintained. To maintain a fully accessible public park, BPC insists that all events are free and open to the public.

Examples of programming Bryant Park that might be adapted to Covington include:

1. Musical performances during the warm weather months, including local professional organizations, young artists and possibly programs broadcast from the waterfront.
2. Film Festival
3. Live broadcast of a baseball (Reds) game, stadium concessions, and former ball players greeting the crowd and signing autographs.
4. Game areas and possibly concessions, such as chess
5. Free classes in yoga, tai chi and knitting.
6. Holiday shopping mall

Ice skating (as at Dayton), although winter high water could cause shut downs

The operating organization would manage funding, maintenance and programming, possibly in cooperation with Covington Parks, the Northern Kentucky Convention Center, and other local organizations. There are several models, including Fountain Square, but the most complete is the **Bryant Park Corporation**. Other examples include Centennial Park, Atlanta GA, Louisville Downtown Management District, the 34th Street Partnership at Madison Square Garden, New York City.

Daniel A. Biederman and Andrew Heiskell, Chairman of Time, Inc. and the New York Public Library co-founded Bryant Park Corporation in 1980. Initially supported by the Rockefeller Brothers Fund, BPC is now funded by assessments on property and businesses adjacent to the park, and by revenue generated from events held at the park. BPC is the largest U.S. effort to provide private management, with private funding, to a public park.

Since the late 1990s, Daniel Biederman has designed plans for new or improved parks in Pittsburgh, Baltimore, Miami, Atlanta, Dallas, Newark, and Richmond. He has also advised Business Improvement Districts in Newark, Miami, Baltimore, and Atlanta, as well as bringing to London (at the request of the Deputy Prime Minister) the framework for the first BIDs in the United Kingdom.

Downtown Management Districts

A downtown Development District may be an option for management of Covington's waterfront. The **Louisville Downtown Management District** (LDMD) was the first such district in Kentucky. It was established in 1991 to promote the economic, residential and cultural vitality of the core of downtown. Its mission is to promote the neighborhood's quality of life by creating a safer, cleaner and more enjoyable environment.

The DMD works with property owners, government agencies and elected officials to secure needed support and resources for neighborhood improvement. A District has defined boundaries and is supported with assessments paid by district property owners. Each district has a Board of Directors comprised of business and property owners, residents, community representatives and government officials committed to striking a balance between development and community enrichment.

The mission of the LDMD is to promote, market and advance the economic development business and residential vitality of Downtown Louisville. Enhancement services include, but are not limited to, providing security, maintenance, ambassadorial and streetscape services and programs to properties and businesses within its boundaries, which are supplementary to those services, and programs normally and customarily provided by local government. Additional activities include comprehensive research, marketing, informational and advocacy services and actively seeking alternative revenue sources.